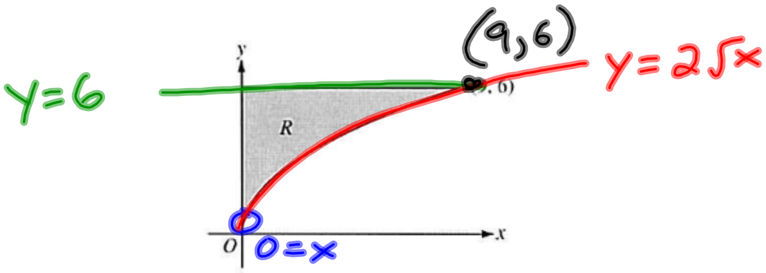
5/8/17

"What goes up doesnt necessarily have to come down."-Unknown

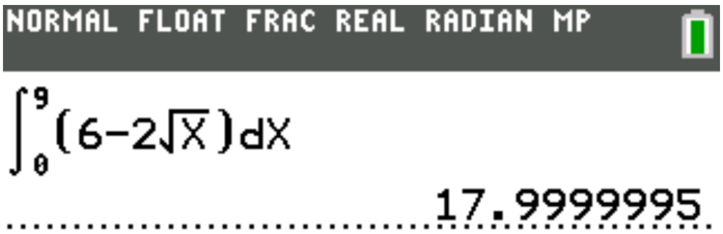
Test 2 on Thursday 5/18



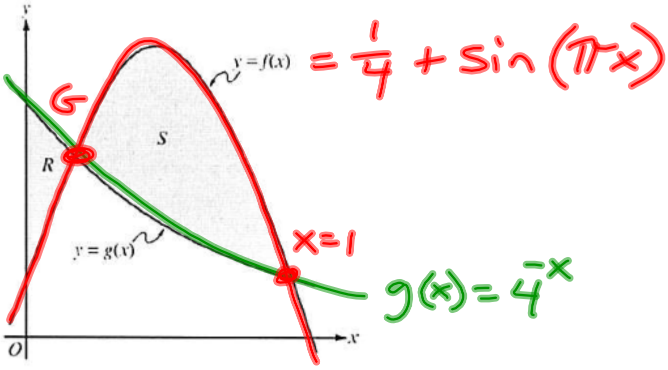
5. Let R be the region in the first quadrant bounded by the graph of $y = 2\sqrt{x}$, the horizontal line $y = 6$, and the y-axis, as shown in the figure above.

Find the area of R.

$$\text{Area} = \int_0^9 (6 - 2\sqrt{x})\,dx$$



$\boxed{\text{Area} \approx 18 \text{ units}^2}$



6. Let f and g be the functions given by $f(x) = \frac{1}{4} + \sin(\pi x)$ and $g(x) = 4^{-x}$. Let R be the shaded region in the first quadrant enclosed by the y-axis and the graphs of f and g, and let S be the shaded region in the first quadrant enclosed by the graphs of f and g, as shown in the figure above.

(a) Find the area of R.

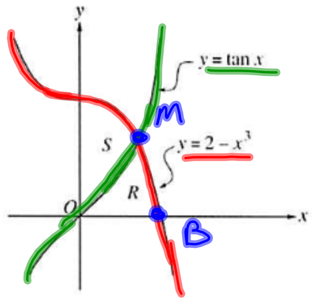
(b) Find the area of S.

a) $\text{Area } R = \int_0^G \left(4^{-x} - \left(\frac{1}{4} + \sin(\pi x)\right)\right) dx$

$\boxed{\text{Area } R \approx .065}$ units^2

b) $\text{Area } S = \int_G^1 \left(\left(\frac{1}{4} + \sin(\pi x)\right) - \left(4^{-x}\right)\right) dx$

Area S ≈ .410 units^2



7. Let R and S be the regions in the first quadrant shown in the figure above. The region R is bounded by the x-axis and the graphs of $y = 2 - x^3$ and $y = \tan x$. The region S is bounded by the y-axis and the graphs of $y = 2 - x^3$ and $y = \tan x$.

~~(a) Find the area of R.~~

(b) Find the area of S. $= \int_0^M \left(2 - x^3 - (\tan x)\right) dx$

$= 1.161 \text{ units}^2$

$B \approx 1.25$

Total Area $= \int_0^B (2 - x^3)\, dx$

Area S = Total Area − Area of S

$= \int_0^B (2 - x^3)\, dx - 1.161$

$= \boxed{.729 \text{ units}^2}$